AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-16. (canceled)

17. (Previously Presented) A method for improving estimates of average background noise energy in a G.729 Annex B compliant voice activity detection (VAD) device by substituting supplemental average background noise parameters derived according to a supplemental algorithm for a running average of background noise parameters derived according to G.729 Annex B, comprising:

determining a maximum full-band energy, E_{max}, and a minimum full-band energy, E_{min}, from a plurality of incoming noise frames during a current period, i;

generating a noise threshold, $T_{noise,\ i+1}$, for the next period, such that $T_{noise,\ i+1}$ = min(2 * min(T_1, T_2), - 21 dBm), where $T_1 = E_{min} + (E_{max} - E_{min})/32$, $T_2 = 4 * E_{min}$, E_{max} = the maximum block energy measured during the current updating period, and E_{min} = the minimum block energy measured during the current updating period;

determining a full-band energy of a current incoming noise frame, E_i;

updating supplemental average background noise parameters to the current period;

comparing the supplemental average background noise parameters of the current period to the running average of background noise parameters derived according to G.729 Annex B; and

if the supplemental average background noise parameters of the current period diverge from the running average of the background noise parameters derived according to G.729 Annex B, then substituting the supplemental average background noise parameters of the current period for the running average of the background noise

parameters derived according to G.729 Annex B.

18. (Previously Presented) The method of claim 17, wherein the running average of the background noise parameters derived according to G.729 Annex B is updated for an incoming noise frame, only if $E_f < E_{f,avg} + 3dB$, $RC(1) < 0.75$, and $\Delta SD < 0.0637$, where E_f = the full-band noise of the current frame and is calculated according to the equation $E_f = 10 \times \log_{10} [1/240 \times R(0)]$, where R(0) is the first autocorrelation coefficient, $E_{f,avg}$ = the average full-band noise energy, RC(1) = the first reflection coefficient, and ΔSD = the difference between the measured spectral distance for the current frame and the running average value of the spectral distance, with a ΔSD of 0.0637 corresponding to 254.6 Hz.

19. (Previously Presented) The method of claim 17, wherein the supplemental average background noise parameters derived according to the supplemental algorithm include full-band energy, low-band energy, a set of Line Spectral Frequencies, and a zero crossing rate for each period.

20. (Previously Presented) The method of claim 17, wherein the running average of the background noise G.729 Annex B include full-band energy, low-band energy, a set of Line Spectral Frequencies, and a zero crossing rate for each incoming noise frame.

21. (Previously Presented) The method of claim 17, wherein the updating supplemental average background noise parameters occurs immediately after the determining a full-band energy of a current incoming noise frame, E_l, if $T_{noise,\ l-1} \geq E_l \geq -70$ dBm is true, and occurs after a fixed waiting period, if $T_{noise,\ l-1} \geq E_l \geq -70$ dBm is not true.

22. (Previously Presented) The method of claim 17, further comprising:

waiting an elapsed time period to compare the updated supplemental average background noise parameters to the running average of the background noise parameters derived according to G.729 Annex B.

23. (Previously Presented) The method of claim 22, wherein the waiting an elapsed time period includes using a counter that counts a consecutive number of incoming noise frames, which are not updated according to the method of claim 18.

24. (Previously Presented) The method of claim 17, wherein every period including the current period and the next period equals 1.28 seconds.

25-37 (canceled)

38. (New) A method for initializing a voice activity (VAD) detection module of an ITU G.729 speech encoder/decoder that handles frames of digitized voice signals, comprising:

extracting noise characterization parameters, that includes full-band energy measurements, from each frame of an initial set of the frames handled by said encoder/decoder;

comparing said full-band energy measurements to a reference level, wherein the reference level is set at a low background noise level;

averaging noise characterization parameters extracted from the frames having the full-band energy measurements equal to or above the reference level;

counting the frames having the full-band energy measurements equal to or above the reference level;

excluding from said averaging and from said counting said frames having the full-band energy measurements below said reference level; and

ending said initializing of the VAD module when the counting of the initial set of frames equals a count that determines an end of an intialization period.

39 (New) The method of claim 38, wherein the extracting noise characterization parameters includes extracting zero crossing measurements and line spectral frequency measurements the initial set of frames.

40 (New) The method of claim 38, wherein the comparing includes comparing the full-band energy measurements to the reference level that is set at the low background noise level of -70 dBm.

41 (New) The method of claim 38, wherein the extracting includes extracting the parameters that are autocorrelation coefficients derived according to ITU Recommendation G.729.

42. (New) The method of claim 38, wherein the averaging includes updating an initial average frame energy, updating an average of a zero crossing rate, and updating an average of a line spectral frequency of the initial set of frames.

43. (New) The method of claim 38, further comprising:

indicating detection of voice activity at an output of the ITU G.729 Annex B VAD module for each of the frames of the initial set having the full-band energy measurement equal to or above the reference level.

44. (New) The method of claim 38, further comprising:

indicating non-detection of voice activity at an output of the ITU G.729 Annex B VAD module for each of the frames of the initial set having the full-band energy measurement below the reference level.

45. (New) The method of claim 38, wherein the initializing includes initializing when the counting of the frames equals a count of thirty-two frames.

46. (New) The method of claim 38, further comprising:

providing running averages of the noise characterization parameters from said frames of digitized voice signals upon the ending of the initialization period.